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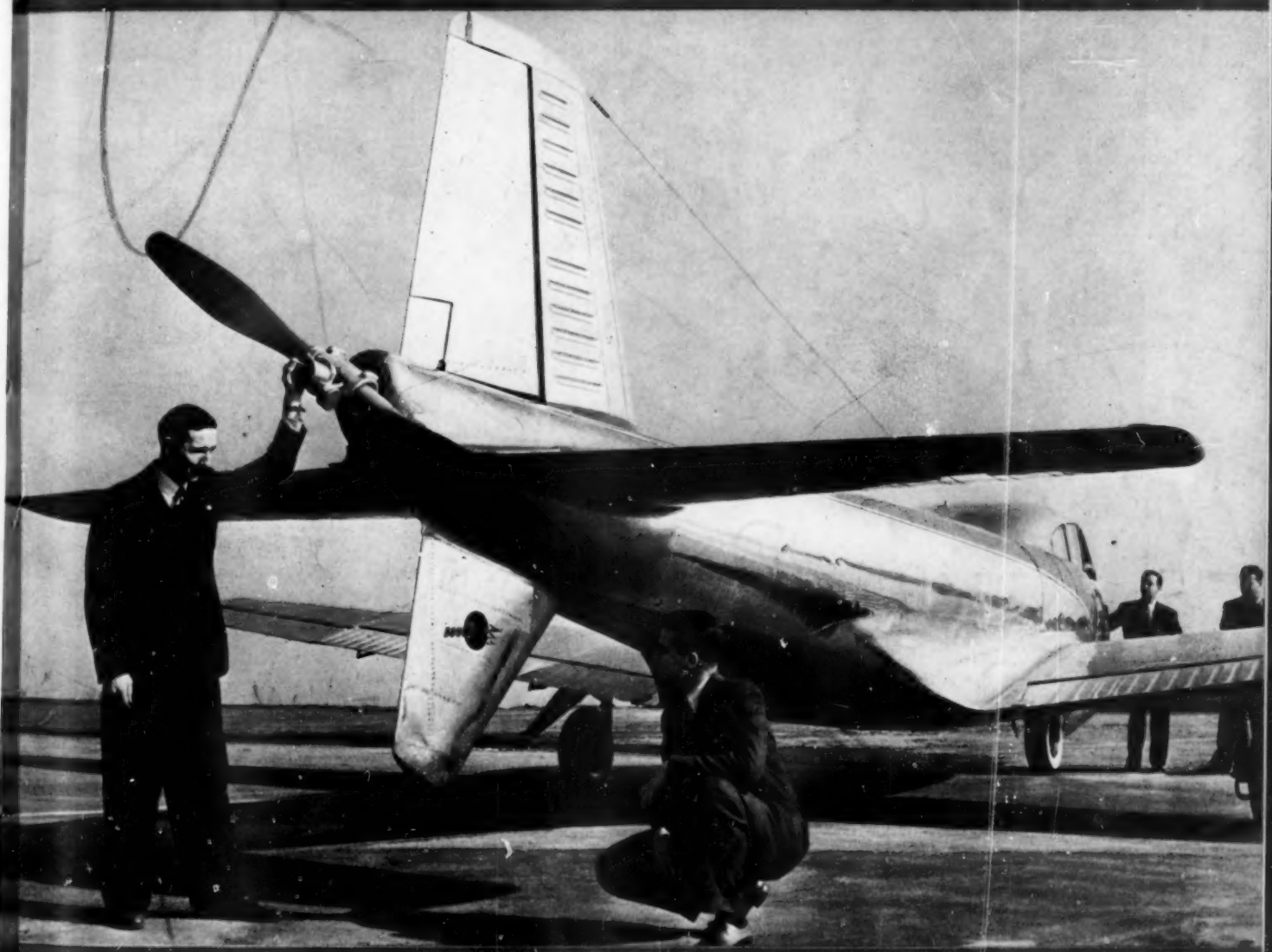
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • JANUARY 18, 1947



Two Blades

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A SCIENCE SERVICE PUBLICATION

Drop-wire undergoing abrasion tests in birch thicket "laboratory." Below, the new drop-wire, now being installed.

WE'RE GLAD THAT BIRCH TREES SWAY

The telephone wire which runs from the pole in the street to your house is your vital link with the Bell System. More than 17,000,000 such wires are in use.

The wire becomes coated with ice; it is ripped by gales, baked by sun, tugged at by small boys' kite strings. Yet Bell Laboratories research on every material that goes into a drop-wire—metals, rubbers, cottons, chemicals—keeps it strong, cheap, and ready to face all weathers.

Now a new drop-wire has been developed by the Laboratories which lasts even longer and will give even better service. It has met many tests, over 6 or 7 years, in the laboratory and in field experiments. It has been strung through birch thickets—rubbed, winters and summers, against trees, and blown to and fro by winds. In such tests its tough cover lasts twice as long as that of previous wires.

House by house, country-wide, the new wire is going into use. Wire is only one of millions of parts in the Bell System. All are constantly under study by Bell Telephone Laboratories, the largest industrial laboratory in the world, to improve your telephone service.

BELL TELEPHONE LABORATORIES

EXPLORING, INVENTING, DEVISING AND PERFECTING FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

NUCLEAR PHYSICS

Atomic Bomb Speculation

Is serious work being done to convert hydrogen into helium and release sun-like atomic energy? Process may be possible only at temperatures of sun.

➤ AMERICA'S atomic scientists are just not talking at all, but the publication in the *Infantry Journal* (Jan.) of a hint by former Assistant Secretary of War John J. McCloy that we were working on a new kind of atomic bomb has started a new wave of speculation.

The big question is: Is serious work being done here on earth to try to duplicate the conversion of hydrogen into helium with release of atomic energy which keeps the sun stoked?

Going to the famous Smyth report, the atomic energy bible, anyone can read that this sun energy theory was advanced by Prof. Hans Bethe, now professor at Cornell and one of those who worked on the atomic bomb. The heat of the sun is explained by a cycle of nuclear changes involving carbon, hydrogen, nitrogen and oxygen, leading eventually to the formation of helium. This theory is, the Smyth report says, "generally accepted."

Since hydrogen, the lightest element, is very abundant, and uranium and thorium, now the raw materials for atomic bombs, are very rare, so much so as to be controllable internationally, any practical success at duplicating on earth what presumably happens in the sun would have extraordinary results scientifically and politically.

The best guesses have been that the carbon-stove reaction, as the Bethe suggestion is also called, won't work except at the immense temperatures of the sun. Unless such temperatures are created in the conventional plutonium atomic bomb itself, sun temperatures don't exist on earth.

It may be a fair speculation that an atomic bomb such as already used might provide the conditions to start the intricate and involved conversion of hydrogen into helium and positrons with release of energy. This is, of course, mere speculation.

This is the way the Bethe cycle is believed to work:

An ordinary carbon atom atomic weight 12 picks up a hydrogen atom of mass one and becomes nitrogen 13, which shoots off a positive electron or positron to become carbon 13, which in turn takes up a hydrogen atom becoming nitrogen 14. This atom adds a hydrogen atom to become an unusual oxygen 15, which expels a positron, which changes it into nitrogen 15. This heavyweight nitrogen joins with another hydrogen atom to make the same kind of carbon atom that began the cycle, plus a helium atom of an ordinary sort.

The total effect is the use of four hydrogen atoms to make a helium atom, two positrons and a release of about 30,000,000 electron volts of energy. Chemists have long known that four hydrogen atoms have a slight excess of mass compared with the helium atom of atomic mass 4, and it is this excess of mass that is turned into energy according to the famous Einstein mass-energy equation.

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RADIO

Models Used to Plan Radio Antennas

➤ MODEL ANTENNAS in Ohio State University laboratories made possible the testing of radio antennas for the Army's B-29 bombers before the first of the huge planes came off the assembly line, reports of wartime study disclose.

Ranging from one-tenth to one-fortieth the actual size of the antennas, the models are covered with copper sheeting or a metallic coating sprayed on a wooden form. First used to test aircraft antennas, they have since aided investigation of radio problems on ships and ground vehicles.

Testing with the models is done at frequencies in the range of 50 and 10,000 megacycles. The model is rotated in an extremely high frequency radio beam to determine the radio wave pattern. The model contains a receiver and variations in strength of the signal are automatically recorded by a device which traces the antenna pattern.

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ENTOMOLOGY

Ants Choose Altitude They Prefer for Homes

➤ ANTS, like men, have their own preferences in the matter of living-places. Some like it high; some like it low. A study of ants of the mountains of Colorado, reported by Dr. Robert E. Gregg of the University of Colorado, showed that 20 species were seldom found above the grassy basal plains, 24 inhabited only the forested slopes, and two hardy ant species lived only on the desolate, tundra-like upper levels.

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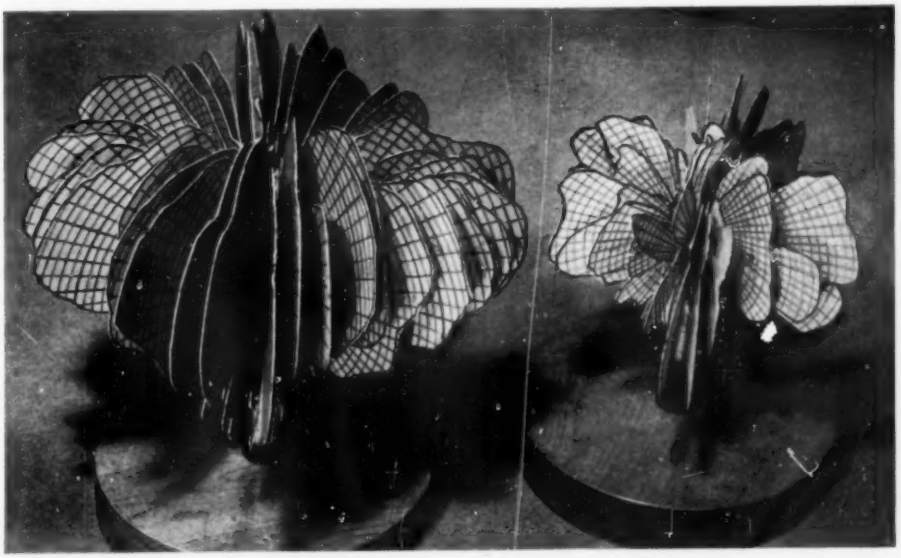

***ANTENNA PATTERNS**—These cardboard models of radio wave-patterns of antennas were built at Ohio State University. Directions of energy radiation are indicated by the radial distance from the center of the cluster to the edges of the pattern elements.*

NUTRITION

Synthetic Vitamins Help

Dr. Robert R. Williams, vitamin researcher, tells role of synthetic vitamins on receiving the Perkin Medal. They should improve staple foods.

► SYNTHETIC vitamins may help save mankind from the Malthusian disaster of increasing faster than its food supply can, Dr. Robert R. Williams, noted vitamin researcher and director of research of the Research Corporation, declared on receiving the Perkin Medal.

The medal is awarded jointly by the Society of Chemical Industry, the American Chemical Society, the American Institute of Chemical Engineers and the Electrochemical Society.

The synthetic vitamins can play their part if used to make more nourishing the staple foods of the world, as white flour in the United States is made more nourishing by enrichment with synthetic vitamins, Dr. Williams explained.

He termed "perfectionists" those who argue for use of whole grains rather than fine milling which removes vitamins that have to be restored to make the product as nourishing as the original.

"If one were feeding dumb animals which are without means of effective protest this might well be the answer," he said. "Humans, however, will normally eat what they like and raise hell if deprived of it."

Enrichment of white bread and flour, at a cost of about 20 cents per capita, he regards as cheap insurance for substantially all Americans against deficiencies of the nutrients added.

On the subject of taking vitamin pills, he pointed out that they are "harmless and we can safely leave to the public to decide how much benefit it derives and how much it is willing to pay for them."

"Many scientists use them and feel that they benefit from them," he added. "It is folly to assume blandly that human diets are quite adequate without them."

Anyone who thinks his own diet is adequate should try feeding it to rats, he suggested. The experimenter is almost certain to find that the rats fail to reproduce in the second or third generation.

A number of antivitamins are now known, he reported. Sulfanilamide was the first of these to be discovered. An antivitamin is believed to exist in corn which fakes the role of nicotinic acid but cannot do the work of this vitamin in preventing pellagra, long known to afflict persons living largely on corn.

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ASTRONOMY

Photocells Reveal Heavens

► MANY DETAILS of the heavens, never seen by man, can now be revealed through the use of photocells sensitive to red light far beyond the region visible to the human eye or that detectable by the best photographic plate. These cells will help us lift the veil that now hides some of the secrets of our universe behind interstellar clouds and will enable us to observe invisible or "dark" stars.

We may "see" many details of the Milky Way system, previously hidden, through use of lead-sulfide cells, effective in the infra-red region of the spectrum far beyond where the human eye can penetrate, Dr. A. E. Whitford of the Washburn Observatory, University of Wisconsin, reported to the American Astronomical Society—Harvard Observatory Centennial in Cambridge.

The lead-sulfide photoconductive cell developed during the war by Dr. R. J. Cashman of Northwestern University is sensitive out to a region whose wavelength is five or six times that of yellow light, and two or three times that of useful infra-red-sensitive photographic plates, Dr. Whitford stated.

"Cool" stars only a few hundred degrees hotter than a flatiron can be examined with this instrument in that part of the spectrum where they shine best, for only a very small percentage of the energy from these stars is in the form of visible light. The cell's sensitivity to infra-red light may give important data on the nature of interstellar dust particles through a study of their effects in reddening the light from distant stars.

Water vapor in the earth's atmosphere absorbs great chunks of the star's infra-red energy, but by "looking between the slats in the picket fence," useful observations can be made in the clear regions. The ability of infra-red light to penetrate haze has already been used to see the dim outlines of the distant nucleus of our galaxy which, though known for many years to exist, had always been invisible because of the interstellar dust clouds that blot out the ordinary light it emits.

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ENGINEERING

Plastics Aid Building

New resins and techniques make plastics important in the building industry. Many are made from wood waste and are not a threat to the lumber business.

▶ THE HALF MILLION tons of plastics now made each year in the United States do not yet constitute a threat to the 5,000,000 tons of lumber and the 45,000,000 tons of brick, cement and building blocks used in the building industry, but new plastic products, using new resins and new techniques, are rapidly becoming more important.

The threat to lumber is not a serious matter to lumbermen, because many of the new building plastics will be made of wood waste such as sawdust, shavings, chips and sideslabs now used, if used at all, for fuel. Farm wastes will also constitute a source of raw material for building plastics, wastes such as cornstalks, corncobs, wheat, straw and sugar cane.

In a recent report of the National Bureau of Standards on plastics and the building industry, Dr. G. M. Kline, chief of organic plastics section, points out some of the new materials and techniques which he says are destined to bear great significance in the building industry. The low-pressure molding processes developed during World War II are of particular importance in the economical production of plastics. They discard the prewar high-pressure machinery, high temperatures, and costly steel molds, and use low-pressure techniques, low temperatures and wood or concrete forms.

The factor that made this reduction in pressure for molding possible is the development of resins which will cure without giving off water. Released water tends to form blisters. The new resins, called polyesters, cure or harden by cross linking through unsaturated carbon-to-carbon bonds, rather than by splitting out water.

The application of the low pressure to flat pieces of plastics for sidewalls, partitions and floors is relatively simple. For shaped forms, special technique is required. The material is made thermoplastic by heat and quickly formed over a mold. Then flexible rubber sheets or bags are forced into contact with it by evacuation, or mild air, or steam pressure in an autoclave.

This new technique has removed the size limitations which presses and steel molds had placed upon molded plastics applications. Domes for radar housing, eight feet high and eight feet in diameter, are easily made in one piece from glass fabric impregnated with polyester resin. Wings for airplanes have been made by the same method. The upper and lower surfaces are formed separately, and then joined together.

Plywood, a familiar structural material for inside work, is now suitable for exteriors, thanks to the use of phenolic resin as the adhesive which gives a bond that is weather and fungus resistant. The casein glue formerly used is not resistant to alternate wetting and drying, and is very susceptible to deterioration by mold growth.

Because of the many new plastics now appearing, a program is under way at the National Bureau of Standards to cooperate in setting up consumer standards for various plastic products. This will assist buyers in getting suitable material for particular applications.

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STRENGTH TEST—The tensile strength of a plastic specimen is measured at the National Bureau of Standards. The sample's elongation under tensile force, applied by a universal testing machine, is measured by an extensometer and recorded automatically on a chart.

ANTHROPOLOGY

No American Race Exists

▶ THERE IS no "American race," but an anthropologist has found at least five outstanding types of Americans representing different sections of the country. Dr. Alice M. Brues, working at Harvard University during the war, analyzed the physical types of GI's to help the Chemical Warfare Service design gas masks.

Here is the way Dr. Brues classified the "American types":

1. A tall, thin-faced narrow-headed type, commonest in those of British extraction and typical of the South.

2. Tall, like the first, but with a wider face and head are the typical persons of Scandinavian extraction, found mainly in the West North Central States.

3. Common mainly in the Middle Atlantic and East North Central States is a short type, round-faced and with a broad head, typical of German, Russian and Slavic extractions.

4. Short, like the third, but with a narrower head is the typical type of French and Mediterranean extraction, common in New England.

5. Found mainly in Texas and Oklahoma is the type indicative of Indian admixture, distinguished mainly by a broad face, out of line with any of the European extractions.

Writing in the *American Journal of Physical Anthropology* (Dec.), Dr. Brues indicates that the "average American" may be of Irish extraction. The Irish, she reports, could not be classified as they are common in all parts of the country and hit the dead center of the American average in their measurements.

The anthropologist measured the head and face size of 3,000 soldiers gathering data for design of gas masks. She found that the famous American melting pot, despite the reduced immigration of the past two decades, has failed to produce an American race. The imprint of the physical differences long existing in Europe, she concludes, are still on the American people.

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GENERAL SCIENCE

Science in the Budget

Truman's plan would postpone the organization of any science foundation, urged by scientists of the American Association for the Advancement of Science.

➤ THE ESTABLISHMENT of a National Science Foundation or its equivalent is recommended by President Truman in his budget message to Congress as a "central agency to correlate and encourage the research activities of the country."

"While freedom of inquiry must be preserved," the message says, "the federal government should accept responsibility for fostering the flow of scientific knowledge and developing scientific talent in our youth."

While again recommending the National Science Foundation to Congress, the President calls attention to the fact that the Scientific Research Board which he appointed under Reconversion Director Steelman in October is making a study of governmental research activities.

The Presidential message suggests that this report will be of service in "establishing a proper program for the new agency." The message also states that "it is assumed that no additional expenditures will be required during the fiscal year 1948."

If this procedure were followed, it would postpone the organization of any science foundation until the middle of 1948 or one and a half years hence.

This will come as a shock to many scientists who are now organizing under the leadership of the American Association for the Advancement of Science an intersociety committee to aid Congress in considering at the present session of Congress some sort of science foundation.

While national science foundation bills were failing to pass the last Congress, the military departments, particularly the Navy, stepped in and gave extensive grants for basic research to university and other laboratories.

The Office of Scientific Research and Development which did major war research will be almost completely liquidated by the middle of this year, the message points out.

While detailed figures are not given in the budget, intense prosecution of scientific research and development for the National defense is contemplated in the recommended appropriations. This is one of the reasons for the high cost of the Army and Navy compared with the pre-war era, along with occupied areas, large forces, and extensive mechanized equipment that must be prepared.

Stock piling of strategic materials for any future war emergency will continue, with new purchases being made and large transfers from the RFC stocks to military stock piles.

Atomic energy expenditures in the year beginning next July 1 will be more than double the amount being expended this fiscal year, and this estimated expenditure of $443,000,000 for next year is explained in part by the fact that during post-war days of the Manhattan District, now transferred to the civilian commission, replacements and maintenance needed were not made.

The message renews recommendations for federal supplements to equalize educational opportunities and standards in the states. The government's relationship to higher education should have serious consideration, the President says, and a commission is studying the matter.

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PHOTOGRAPHY

Photo-Flash Unit Takes Fast Pictures

➤ AN ELECTRONIC photo-flash unit which fires photographic flashes faster than the average photographer can take pictures has been developed by the Navy.

The compact, light-weight unit is designed to operate at three-second intervals, firing 4,000 flashes without changing batteries. The new unit produces more than 10,000 flashes with a single bulb and consumes less electricity for 10,000 flashes than an average light bulb burning all day.

The electronic unit was developed by Brandt B. Conway of the Naval Research Laboratory Airborne Coordinating Group and the Research and Development Branch of the U. S. Naval Photographic Service, both at Anacostia, D. C. Mr. Conway is on loan to the Navy from the Philco Radio Corporation.

Standard service model of the photographic flash unit will weigh 11½ pounds and will fire 1,500 times, though provisions have been made to use batteries enabling photographers to get 4,000 flashes without changing batteries.

Exposure time for the flash with the electronic unit is 1/10,000 of a second with the total light equal to a medium size flash bulb. The light is triggered either with a manual button or a synchronizer for electrical triggering.

Navy photographic research work is now underway to adapt the new unit to trivision, the Navy's third dimensional photography.

Commercial models of the flash unit will be available at a later date, the Navy said.

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PUBLIC HEALTH

World in Better Health Than Expected After War

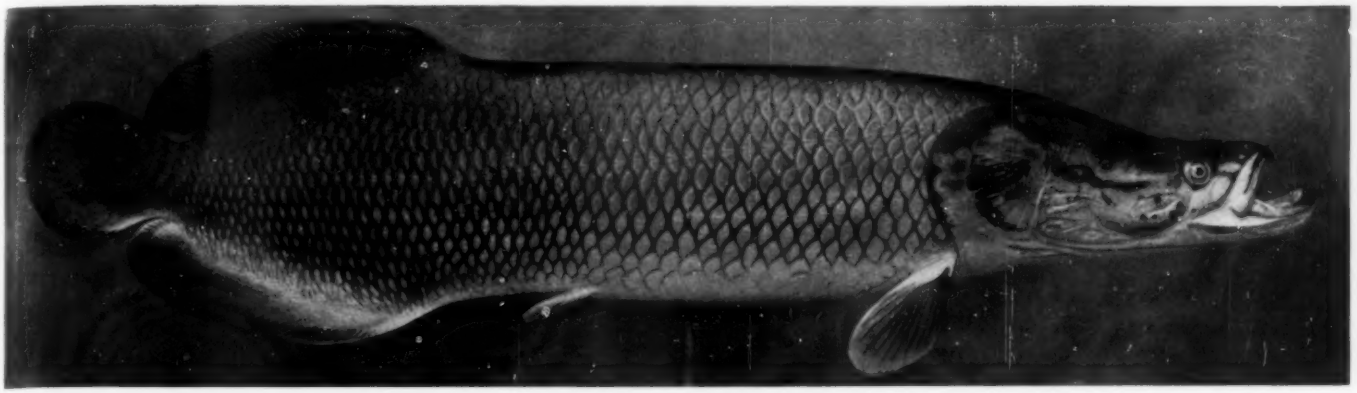
➤ "THE WORLD is in far better health today than we ever dreamed it could be so soon after the most widespread and devastating war in history," Dr. Wilbur A. Sawyer, internationally known health authority and director of the health division of UNRRA, declared.

UNRRA's health activities in Europe in connection with administration of the International Sanitary Conventions of 1944 have now been turned over to the interim commission of the new World Health Organization. WHO is also receiving from UNRRA some funds for carrying on these activities and UNRRA supplies still in European countries for controlling epidemics.

"Now that the main emergency is behind us," Dr. Sawyer stated, "the continuance of international disease control can confidently be left to the health departments in the countries themselves with the support of the new World Health Organization."

UNRRA health activities in China will be turned over to WHO on March 31.

"After World War I," Dr. Sawyer said, "there were tremendous epidemics of typhus fever, typhoid fever and other diseases. Following this war in which destruction and displacement of peoples was much greater and governmental health agencies were largely disrupted, there have been no major epidemics in Europe."



NINE FEET LONG—This model of the pirarucu, biggest fresh water fish in the world, is nine feet long. It is on exhibit at the Chicago Natural History Museum.

"Part of this accomplishment is due to the advances in medical science between the wars. Major credit should, however, be given to UNRRA for getting health departments on their feet and for supplying them with enormous quantities of effective new drugs and insecticides such as penicillin and DDT.

"Phenomenal results were obtained in Poland in the suppression of typhus with DDT powder and in Greece in a nation-wide attack on malaria by airplane sprayings of marshes and hand spraying of houses and small streams with DDT."

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ENTOMOLOGY

Tires Hide Stowaways

Pacific island mosquitoes have ridden to this country in tires and shell cases. DDT is on the job to prevent the spread of disease.

➤ HUNDREDS of thousands of Pacific island mosquitoes, some of them potential disease carriers, have been coming to this country in tires and perhaps also in shell cases and amphibious vehicles returned from combat areas by the Army and Navy.

The stowaways were first detected by Sanitary Inspector John L. Chambers of the U. S. Quarantine Station, Port of Los Angeles. During a routine Public Health Service quarantine inspection of a cargo ship from the New Guinea area, he noticed several live adult mosquitoes in one of the holds of the ship. Crew members also complained to him that they had been annoyed by mosquitoes for five or six days after leaving port.

"An investigation revealed that mosquitoes were breeding heavily in fresh water contained in motor vehicle and aircraft tires which constituted a large part of the cargo," Assistant Sanitarian John J. Pratt, Jr., Dr. Robert H. Heterick and Dr. John B. Harrison of the U. S. Public Health Service and Capt. Louis Haber of the U. S. Army Sanitary Corps report in the Military Surgeon.

"It was estimated that approximately one half of the 8,880 tires aboard contained water varying in amount from one cup to five gallons per tire and that a large proportion of these contained living mosquito larvae. It is conservatively estimated that the average tire examined contained from 20 to 30 larvae."

Before the ship docked, all openings leading into the holds were closed and each hold was thoroughly sprayed with freon-pyrethrum aerosol. Many dead adult mosquitoes were recovered from the holds after spraying. Later a disinfestation squad was stationed on the dock warehouse loading platform armed with knapsack sprayers containing 5% DDT in kerosene. As the tires were unloaded and rolled into freight cars they were quickly inspected for water. Those found containing any were sprayed with DDT. This avoided delay in moving tires from ship to cars for trans-shipment. The cars were also thoroughly sprayed before the tires were loaded against any adult mosquitoes that might emerge in transit from any larvae or pupae not killed when the tires were treated.

Some of the mosquitoes were identified as carriers of dengue fever and filariasis in their native Pacific islands. Some were not known as carriers of human diseases, though there is always a possibility that such mosquitoes may become carriers in a new environment. In 11 subsequent shipments of tires, water was found in eight and mosquitoes were found breeding in three of the shipments. Amphibious vehicles were also found to contain water, but no mosquitoes were found breeding in them. All material which contained water was routinely treated with DDT in kerosene.

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ICHTHYOLOGY

Biggest Fresh Water Fish Grow to 15 Feet Long

➤ THIS WEEK'S fish story, authenticated by the Chicago Natural History Museum:

Down South America way, in the Orinoco river, relatives of the herring grow to be 15 feet long. The pirarucu is the largest fresh water fish in the world.

Proof: Taxidermist Leon L. Pray has mounted a nine-foot model of this giant fish for public admiration. That 15-foot size is admittedly of one that got away, presumably, as the Museum put it down as an "unverified report" worth repeating however.

This story has teeth in it. The pirarucu has a bony tongue and natives collect the rasp-like teeth covering the tongue and use them to grate coconuts and roots for their dinner tables.

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AERONAUTICS

Engine Trouble Analyzer To Make Flying Safer

➤ SAFER FLYING is promised by a new engine trouble analyzer that enables the flight engineer during flight to locate improper operation that might cause engine stoppage so that repairs can be made on landing.

The 90-pound device, installed in transports, detects operating difficulties in the ignition system, fuel injection system, and hydraulic or electrical accessories. It also detects lack of magneto or engine synchronization, engine roughness, and even makes a vibration analysis of combustion, detonation, and valves and fuel injection seating in a selected cylinder.

This new engine trouble analyzer was revealed to the Society of Automotive Engineers by John Lindberg, of Pan American Airways, N. Y., and Clifford Sackett of the Lindberg Instrument Company, Piedmont, Calif. They described it as a graphical indicator employing electronic methods to create graphs of magneto primary voltage and of cylinder vibration pickup voltage, also of engine timing degrees. It is sensitive enough to locate a fouled sparkplug.

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SEISMOLOGY

Dam Reservoir Creates Man-Made Earthquakes

➤ MAN-MADE earthquakes, more than 4,000 small tremors, have been recorded at Lake Mead, the giant reservoir created by Boulder Dam on the Colorado River. Caused by the adjustment of the earth's surface to the weight of 40,000,000,000 tons of water in the lake, the quakes are so slight that only a few could be felt by human beings.

As recorded on seismographs of the U. S. Coast and Geodetic Survey, the more than 4,000 man-made tremors add up to a total force of about 1% of that of one destructive natural quake, the Bureau of Reclamation of the Department of Interior reports.

Scientists say that the numerous but small shocks are no threat to Boulder Dam, because the quakes are associated with natural geological faults in the earth. The extra load on the earth from an artificial lake is big enough to cause minor tremors, but it is not great enough to cause new faults or produce severe earthquakes.

Most of the earth movements came in the first years after the dam was completed in 1936 and only a few have been noted since 1942. Meanwhile, it is estimated that the lake basin has settled several inches with respect to the neighboring mountains.

Data on the man-made tremors, reported in the Bureau of Reclamation's magazine, *Reclamation Era*, were collected by three strategically-placed seismographs. Other seismographs have been used to record local shocks from the reservoirs of Shasta and Grand Coulee dams.

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ASTRONOMY

Heavenly Atomic Explosion Occurred on Nova Persei

➤ DETAILS of a series of atomic explosions that occurred several decades ago have been worked out by Prof. Dean B. McLaughlin of the University of Michigan. Clouds of gas with speeds of from 500 to 2,000 miles per second rushed out from Nova Persei in 1901, a star far too faint to be seen with binoculars that within two days temporarily became one of the brightest stars in the heavens.

Eruptions on the star probably followed each other in rapid-fire order. What originally appeared to be one cloud of gases later showed up on the star's spectrum as three shells moving at different speeds. The main flow of gases, racing forth from the star at 1,000 miles per second, formed a shell around the star that today appears as a small nebula.

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AERONAUTICS

Encased Magneto Designed To Better Fit Aircraft

➤ HIGH-FLYING aircraft need something more than superchargers to stuff air more rapidly into the fuel ports. In the thin atmosphere at near-stratosphere altitudes there are apt to be troublesome corona discharges or flash-overs between parts of the magneto equipment. To obviate this, E. B. Nowosielski of Bloomfield, N. J., has designed an encased magneto with a pair of oil-sealed pumps that maintain normal atmospheric pressure within. Rights in the patent, No. 2,413,993, are assigned to the Edison-Splitdorf Corporation.

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IN SCIEN

CHEMISTRY

German Insecticide May Supplement DDT

➤ "BLADAN," an insecticide first produced in Germany during the war, may prove a useful supplement to DDT in some uses, entomologists of the U. S. Department of Agriculture state.

For example, DDT is not effective against certain species of mites and aphids that attack apples, though it does a good job of killing codling-moth larvae. So field tests of the two insecticides in combination are in order.

Bladan has hexaethyl tetraphosphate as its active principle. It has an advantage over DDT in that it is easily soluble in water; but offsetting this is the fact that it deteriorates quickly and hence does not have the long-lasting residual effects of DDT.

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PALEOBOTANY

Devonian Parasite Killed By Other Parasitic Fungus

➤ "A KILLER KILLED" might have been the headlines in the Devonian Daily News on a story covering a picture shown at the Princeton University Bicentennial Conference on Genetics, Paleontology and Evolution by Dr. Henry N. Andrews, Jr., of the Missouri Botanic Garden.

In a specimen of one of the oldest of known land plants, dating back some 300,000,000 years to Devonian geologic time, Dr. Andrews found what appears to be the spore-case of a presumably parasitic fungus. But instead of being filled with its own spores it contains a lot of smaller spore cases of a different fungus. The parasite had been parasitized.

Dr. Andrews used an exceedingly careful chemical technique to get the actual plant remains out of a certain type of fossils. Then he was able to handle them as if they were plants that had been plucked and pressed only a few weeks ago. He can even demonstrate the presence of such fine details as the chloroplast, tiny green bits of living stuff that give plants their color even though long since dead and faded.

Science News Letter, January 18, 1947

NE FIELDS

CHEMISTRY

New Alloys Increase Uses for Aluminum

➤ NEW ALUMINUM alloys, containing small amounts of beryllium which increases their tensile strength, were revealed by General Electric research laboratory. They open new fields for aluminum uses.

Their resistance to being pulled apart is from 30% to 80% greater than present commercially-available aluminum casting alloys, it is claimed. They resist corrosion, have high thermal stability, and can be both cast and wrought.

Zinc alloys containing beryllium, developed by GE during the past year, possess spring qualities comparable to brass and have other qualities that make them more usable for many applications than the present commercially-available wrought-zinc alloys.

A process for brazing ceramics to metal is important, particularly in the vacuum tube field. In this method, the ceramic is coated with titanium by heating in pure dry hydrogen or in a vacuum, then applied to the metal and brazed with copper by heating again in hydrogen or a vacuum.

Science News Letter, January 18, 1947

POMOLOGY

Frost-Dodging Apple Tree Blossoms One Month Late

➤ A RELUCTANT apple tree, that blossoms a month later than its orchardmates and thereby escapes late spring frosts, is announced through the medium of the U. S. plant patent 722, issued to its originator, Max Bazzanella of Mineral, Va. The tree originated as a seedling on his farm in Louisa County, Va., about 15 years ago, and has been in bearing for a decade. Mr. Bazzanella states that he has propagated it by budgrafting, and finds its cions true to the parent type.

The medium-sized fruits are described as spicy and sub-acid, with a quince-like flavor. The originator regards the new variety as especially suitable for drying and for general home use.

Science News Letter, January 18, 1947

TEXTILES

English "Terylene" Is Strong Synthetic Fabric

➤ ANOTHER new fiber will take its place along with rayon and nylon in clothing and other fields and may become as widely used. Its trade name is "Terylene," and it was developed by chemists of the Calico Printers Association of Manchester, England.

Terylene is claimed to differ from all other fibers yet produced. Textiles made of it are described as resembling silk. They can be washed, ironed and pressed without special precautions. The fiber can be very fine, or coarse if great strength is desired. It is resistant to heat and light and can be woven or knitted.

The new fiber is derived from terephthalic acid and ethylene glycol, both synthetic substances. Ethylene glycol, an antifreeze liquid, very similar to glycerine, is made by passing ethylene into chlorine water and treating the product with a base such as sodium hydrate. Terephthalic acid is a petroleum derivative.

Science News Letter, January 18, 1947

ENGINEERING

Lighter Automobiles Must Meet Flood of Foreign Cars

➤LIGHTER automobiles must be built in America if an incoming flood of foreign cars is to be curtailed and if foreign markets are to be supplied by us with the light-weight vehicles demanded abroad.

This is the opinion of W. D. Appel, of Willys-Overland Motors, expressed to the Society of Automotive Engineers. Really light-weight cars can be built, he said, if the aesthetic takes second place to the functional.

Using light metal alloys and designing smaller cars are two ways suggested. Others include simplifying the design to eliminate machining operations, using higher stresses, and combining several functions in a single part. The body, the heaviest single unit, can be drastically lightened.

Better heating of automobiles for passenger comfort was urged by Lewis A. Rodert of the U. S. National Advisory Committee for Aeronautics, who suggested the adaptation of two aircraft heating methods to road vehicles.

In one system, air enters an intake scoop, passes through a filter and heater, and is then circulated through the panels of the side walls, heating by radiation and convection. In the other, a heater mounted at the rear of the car would force air from vents downward over the car windows, passing out by vents in the floor. Either method would keep the interior at comfortable temperature and humidity and prevent fogging on the windshield.

Science News Letter, January 18, 1947

OCEANOGRAPHY

Pacific Floor Has Many and Deep Holes

➤ THE OFT-SUNG assertion, "There's a hole in the bottom of the sea," stands in need of revision, so far as the western Pacific is concerned. There are a number of holes, and they are much deeper than anybody suspected, a wartime echo-sounding survey disclosed. It was presented before the meeting of the Geological Society of America by Prof. H. H. Hess of Princeton University.

The sloping sides of these great deeps are marked by great arches of warped bedrock hundreds of miles in length, forming veritable submarine mountain chains. Topmost peaks of these drowned ranges emerge as small islands.

There is also a great lava plateau, separating the north Pacific basin from the western island arc groups that include Japan, the Philippines, the Mariannas and other smaller archipelagoes.

Science News Letter, January 18, 1947

MEDICINE

Colds Can't Be Prevented By Disinfecting Air

➤ HOPES that colds and other respiratory ills can be banished by disinfecting the air of public places are dashed by latest U. S. Public Health Service studies.

Dr. R. E. Dyer, National Institute of Health director, concludes that installation of equipment for treating air in theaters, shops, factories and offices is not warranted by present information.

Chemical treatment of air with glycol aerosols and irradiation with ultraviolet light have been tested over a number of years. Federal experts have been working on the problem since 1936. The National Research Council and the American Public Health Association also made studies and reports.

Science News Letter, January 18, 1947

CHEMISTRY

Cinderella of the Forest

Modern chemists are finding the bark of forest trees valuable in insecticides, glue, plastics and even fabrics. Barks also furnish medicine and flavoring.

By MARTHA G. MORROW

➤ CHEMISTS AND foresters seeking new uses for bark are not barking up the wrong tree. The thick bark of almost any forest tree, be it redwood, pine or Douglas fir, has been found valuable raw material for glues, plastics and insecticides.

Bark, which may compose up to 40% of the total volume of a tree, has long been considered worthless in logging. When poles, piling, saw logs and pulpwood are harvested, the bark is usually wasted. With little additional effort it can be saved if economically worth while to remove before milling.

Recent research may transform the bark of the great forest trees from a manufacturing nuisance into valuable raw materials. Already the bark of these gigantic conifers is being used commercially, with an increasing demand foreseen for the future.

Using Waste Bark

Bark has been reduced to its three principal components in a search for possible uses for this waste material. One resembles flaked cork. Another is a hard, fibrous tissue. The third is soft and powdery. They differ in chemical make-up and give promise of commercial possibilities.

A powder from bark has proved practical as a conditioner in many types of insecticide dusts, research conducted by the Weyerhaeuser Timber Company of Longview, Wash., showed. This bark dust is specially useful in insecticides that tend to become lumpy, making them flow more freely.

Combination of cork and fiber, another bark product, is used as an ingredient in molding compounds, base of modern plastics. When subjected to pressure and controlled temperature, it produces strong, hard shapes in a durable, inexpensive plastic.

Another bark product, combination of cork powder and fiber, has been found adaptable for use in a new, low-cost resin-base glue. It is used in manufacturing plywood and laminated wood. Following its release to manufacturers of plywood glue, demand for this bark product has exceeded production capacity of the plant.

While other uses for forest tree bark are still being investigated, findings to date are promising enough to justify installation of a bark processing plant, states Clark C. Heritage, technical director of the timber company.

No Finished Products

Here a carload of bark-based forest products will be produced daily. No finished products will be manufactured, however; the raw materials are to be sold to producers of glue, plastics and insecticides.

Finding uses for this waste material makes it feasible to remove bark before logs are sawed, with consequent savings in sawmill operations. At present the bark frequently is processed through the entire mill, only to end up in refuse burners. But practical uses are being developed for the bark to justify the expense of removing it before milling.

BARK FOR BACKS—Fiber from redwood bark, held by the young lady, was used in making the jacket she wears.

Unlike such timber trees as hemlock, pine, spruce and Douglas fir, a few trees are specially valued for their bark. The bark of one is used for insulation. Medicine is extracted from another and spice is made from the bark of a third.

Quinine, important ingredient in many remedies, is obtained from the bark of the cinchona tree, native to the Andean region of South America. The bark is always collected during the rainy season, when it is stripped more easily from the wood. The importance of this anti-malaria bark was emphasized during the recent war when our troops were forced to operate in malaria-haunted tropics.

The earliest well-authenticated instance of the medical use of cinchona bark was in 1638 when the Countess of Chinchon, wife of the Viceroy of Peru, was cured of an attack of fever after taking the powdered bark. The genus was named for the Countess, whose name was misspelled in the process.

Cultivation of the cinchona tree has been attempted with varying degrees of success in Algeria, Ceylon, India and Java. The Java plantations, due to the industry of the Dutch planters and the chance discovery of a high-yielding strain, have been so successful as to enable the Dutch producers to establish a virtual monopoly in the field.

Cork Is Bark

Cork, used in bottle stoppers, is the outer bark of an oak closely related to the native liveoaks of our South and Southwest. The tree is native to the mountainous regions on both shores of the western Mediterranean—Portugal and Spain on one side, Spanish and French North Africa on the other.

The first crop of cork bark can be stripped off when the tree is 15 to 20 years old. Thick shells of bark are pried off in slabs from the trunk of the tree. A new crop may be removed about every ten years for at least a century.

The raw bark is put in big kettles or vats, weighted down and boiled vigorously for half an hour to soften it and remove water soluble materials. Next the rough outer surface of the bark is scraped off and the slabs stacked up to dry. The cork is then ready to be made into cork blocks needed for life belts and fishing net floats; corkboards for insulation in refrigerators and house walls;

composition cork for crown cap liners; and ground cork for heavy-duty linoleum.

Cinnamon, among the oldest spices known, is the inner bark of a tree native to the island of Ceylon. The natives cut down the tops of the trees that are still young. New slender stems grow out from the stump season after season, making them look like shrubs.

Only after the tree is about six years old are the branches peeled. This is done just after the heavy rains, when the trees are full of sap, so the workers can easily separate the bark from the stems without breaking it.

The branches to be peeled are cut close to the trunk, then scraped and the bark removed in long sections. As these dry, they curl and form the familiar cinnamon sticks.

Sassafras Bark

The first cargo of barks ever exported from what is now the United States included a large quantity of sassafras bark. This is used today, much as it was 300 years ago when shipped from Jamestown, in perfuming soaps and preparing scents and toiletries.

Fiber from redwood bark is blended with wool in making blankets, jackets and even felt hats. This reddish fiber is already widely used as insulation in houses and refrigerators, but its use in fabrics is relatively new.

In lumbering on the West coast where the redwoods grow, balls of felted redwood fiber were discovered in the bark shredding machines. This led to experiments to produce a "wool" fabric from redwood bark. The short, kinky fibers blend readily with sheep's wool and can be handled, napped and brushed. Separated by a machine, these fibers are blended with natural wool. The mixture is carded, combed and spun into yarn. Redwood fiber can replace 15% to 60% of the wool in some fabrics.

The earliest industrial use of any kind of bark was in tanning. The rough bark of oak, hemlock and chestnut was put right into the tanning pots with the raw hides. The tannic acid diffusing out into the water acted directly on the hides. Only within recent decades has tannic acid been extracted from the bark before using.

Today sumac bark also is used for tanning fine leather. In Australia tannic acid is extracted from eucalyptus and acacia trees.

Bark accumulating in large quantities at plants where tannin is extracted led to a search for uses for the fiber. It has been found useful as a filler in paper, cardboard, wallboard, roofing felt, composition shingles and for ornamental purposes in some types of wallpaper.

The search for new uses for bark continues. Bark, that may be ten inches or so thick on some trees, is expected to become the Cinderella of the forest as research points to new uses.

Finding new outlets for forest products is but one phase of the industrial program now under way for increasing the permanent usefulness of American forests. First, there is the growing of trees in greater abundance. Second, there is protection of forest growth against destruction by fire, insects and disease. Third, there is greater utilization of each tree. It has been generally accepted that less than half of a log delivered to a sawmill emerges as lumber. For the remainder there has been little or no economic use. Today this part of the picture looks increasingly bright.

Science News Letter, January 18, 1947

AERONAUTICS

Pusher Type Airplane Has Two-Bladed Propeller

See Front Cover

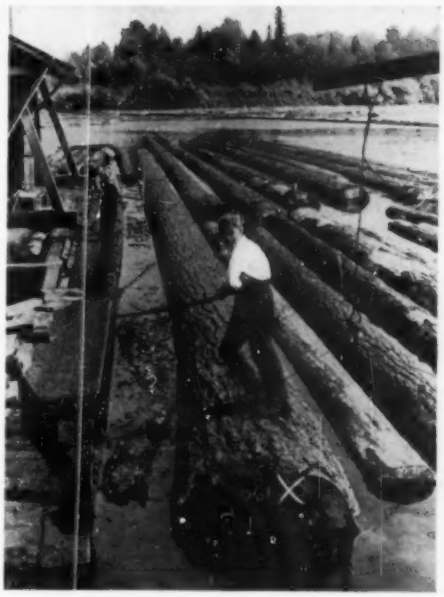
➤ A PUSHER TYPE of airplane, pictured on the cover of this SCIENCE NEWS LETTER, with its two-bladed propeller at the rear tip of its fuselage, is now ready for its first test flight. It is a five-passenger craft, with two engines inside the body to the rear of the passenger cabin, both of which operate the single eight-foot propeller working together, or either can do so working alone.

The new plane, still in experimental stage, is a product of Douglas Aircraft Company, and will be known as the Cloudster. It is an all-metal monoplane with a range of 1,100 miles and a speed of about 200 miles an hour. Its tricycle landing gear retracts into the nose and wings.

Power for the plane is furnished by two 250-horsepower Continental engines, mounted to use the aerodynamics principle of center-line thrust. Either engine can be cut in or out without affecting flight control. With one engine, the 35-foot long plane with a 40-foot wing span, can climb 600 feet per minute; with both in operation, the rate of climb is approximately 1,500 feet a minute.

Science News Letter, January 18, 1947

Two thin coats of *paint,* varnish, enamel or shellac are better than one thick coat when finishing furniture.



LOGGING—These logs are in a millpond headed for the saws. Some logs give up their bark easily during logging operations due to rough handling, but the majority cling to their coarse outer skin, making the job of "barking" no easy matter.

EVOLUTION

Smoky Industrial Cities Are Factor in Evolution

➤ SOOTY, smoky cities of the industrial age are apparently factors in evolution, Dr. E. E. Ford of the University Museum, Oxford, England, reported to the Conference on Genetics, Paleontology and Evolution. He has found two dark-colored variants of a common moth is the neighborhood of British cities, one of them nearly black, the other dark brown.

Science News Letter, January 18, 1947

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Do You Know?

Glass-like *needles* embedded in their tissues prevent many species of sponges from having commercial value.

Grenada island, British West Indies, is now the world's largest producer of nutmegs; it produces about 40% of the world's total crop.

Sweden is to have a "Big Inch" *pipeline;* it will carry American oil delivered by tankers to the west coast of the country across the nation to Stockholm on the Baltic sea.

There is still more productive *crop land* in the United States per capita than the average of the world as a whole, although much has been lost by erosion and poor farming practices.

Red-hot *steel sheets* are stretched longer and thinner in steel mills by passing through a series of rolls in which tension is introduced by increasing the relative speeds of the rolls in successive stands.

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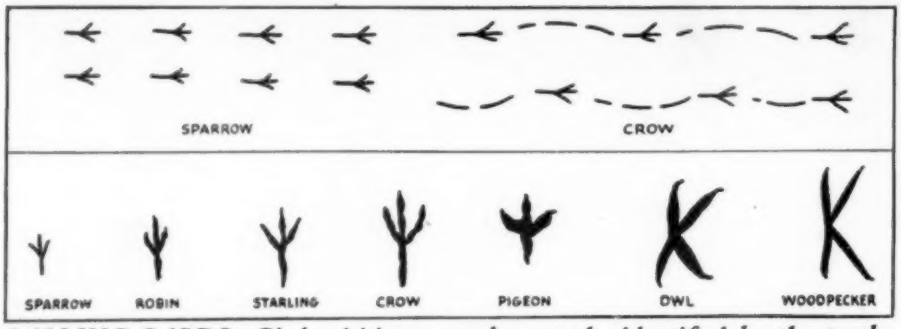

CALLING CARDS—Birds visiting a garden can be identified by the tracks they leave in the snow.

ORNITHOLOGY

How to Be a Bird Sleuth

Hopping birds leave a different kind of tracks from walking birds. Crows, robins, owls and pigeons all have distinctive foot prints that can be recognized easily.

➤ BIRDS VISITING your garden in search of food can easily be identified by the tracks they leave. Although such tracks can be found in sand or soil, they are seen most plainly in freshly fallen snow.

You do not have to live in the country to recognize the prints of wild creatures. In almost every garden and yard, however small, you can find the prints of a few birds, if you look for them. Visitors may come and go unknown to you, but they always leave their calling cards in the snow, states Richard Headstrom, who lectures at Boston's Museum of Natural History.

The lone print of a woodpecker at a feeding station may be a tell-tale sign that the bird made a brief appearance, but found nothing to eat and so flew off to more productive feeding grounds. The aimless tracks of a robin in the cold north may indicate the bird's dependence upon your generosity if he is to survive the winter.

Bird tracks at first look much alike, but with a little practice you can spot the all-important differences. The shape and size of the print, and the number of toes showing are characteristics which aid us in identifying bird tracks. Whether the tracks are in parallel pairs or staggered is also important, Mr. Headstrom states.

Small birds hop as a rule; thus their footprints fall in parallel pairs. Larger birds actually walk, leaving prints in a staggered line. A few birds, such as the robin, divide their locomotion almost evenly between hopping and walking.

The sparrow, a hopping bird, leaves paired prints. To identify these from the prints of other hopping birds, note that the side toes are commonly shorter than the middle ones. The size, too, is of some help, being about an inch long.

The toes of a crow are distinctive, the middle toe being definitely nearer to the inner than the outer toe. The crow's track is about three and one-half inches in overall length, with the hind toe print about one inch long. The prints may be paired or alternate, for the crow sometimes hops and sometimes walks. When walking, the toes usually drag.

The robin's toes commonly drag and the three front toes are evenly spaced. The prints may be either paired or alternate, but they are much smaller than those of a crow, being around two and a quarter inches in all. While a starling's tracks closely resemble those of a robin, they are about a quarter of an inch longer. The tracks are usually alternate.

A four-toed print, each print bearing the mark of a claw, is left by a domestic pigeon. Owls leave the same kind of print, but whereas the pigeon turns three toes to the front and one to the back, the owl turns two to the front and two to the back. Woodpeckers also turn two toes to the front and two to the back, but their toes are more slender than those of the owl and they do not leave prominent claw marks.

With a little study, it is possible to read bird tracks in the snow as readily as words on a printed page, Mr. Headstrom states. Full details are given in *Horticulture,* official magazine of the Massachusetts Horticultural Society.

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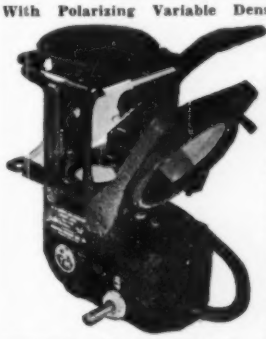

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ZOOLOGY

NATURE RAMBLINGS by Frank Thone

Mysterious Cat

➤ THE PUMA or mountain lion often follows human beings, apparently out of sheer curiosity, but very seldom attacks without provocation.

Less than a dozen well-authenticated cases could be found by Stanley P. Young and the late Edward A. Goldman of the U. S. Fish and Wildlife Service when they were gathering material for their book, *The Puma, Mysterious American Cat* ($4.), published by the American Wildlife Institute. And there is one case on record in South America of a puma saving a woman's life by driving off other predatory animals that were attempting to attack her.

The puma's record with relation to animals, both wild and domestic, is not so free from bloodstains. It is a big animal, and needs a lot of meat. One deer a week is its average ration, the authors state. It kills and eats almost all other kinds of wild animals, even porcupines and skunks. Its appetite for domestic animals, all the way from poultry to crows, has been its undoing, for it has now been wiped out over practically all of its former range in the eastern United States, and greatly reduced in numbers in the West. The same thing is happening to it in the settled parts of Middle and South America.

Few animals have such a variety of names. In addition to puma and mountain lion, it is called catamount, cougar, deer tiger, Mexican lion and panther. The colloquial "painter" is a corruption of the lattter name. The authors prefer puma because that was the name by which it was known to the South American Indians of the ancient Inca empire.

Science News Letter, January 18, 1947

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PALEONTOLOGY

Pre-Dinosaur Time Studied

Arizona fossils about 200,000,000 years old help fill in the picture of prehistoric life before the reign of the dinosaurs.

➤ A PICTURE of life in North America just before the reign of the dinosaurs is being formulated by University of California paleontologists from the fossil remains of beasts who stalked Arizona about 200,000,000 years ago.

The fossils, gathered at Meteor Crater and in the Painted Desert area, represent the first comprehensive evidence of life in North America for a 20,000,000 year period preceding the predominance of the dinosaurs.

This chapter of prehistoric life in North America, the lower Triassic epoch, covering the period from the end of the age of amphibians to the beginning of the age of reptiles, has long been missing. The fossils indicate that life in the Arizona area was similar to that long known in Europe and South Africa for the same period.

The Arizona fossils, collected over a 10-year period, have been described by Dr. Samuel P. Welles of the University of California.

Twenty skulls of large amphibian species were excavated from Meteor Crater. These take many forms, one being a peculiar beast known as aphaneramma, known previously only in Spitzbergen and Greenland. Aphaneramma had a long, slender snout and was about 18 inches long.

Dr. Welles described representatives of a group known as pseudo-suchians, found near Holbrook, Ariz. These were probably ancestors of the dinosaurs, reptiles which were developing bi-pedal characteristics. They stood three or four feet high, and had sharp, serrated teeth.

These prehistoric beasts inhabited a swampy flood plain, near sea level, which existed in Arizona about 200,000,000 years ago. To the west of the plain lay the ocean.

Some of these reptiles developed into dinosaurs, ranging in size from chickens to such beasts as brontosaurus, which was nearly 100 feet long, Dr. Welles said. The dinosaurs ruled for a 100,000,000 years, in the age of reptiles, giving way to the age of mammals about 50,000,000 years ago.

Science News Letter, January 18, 1947

BOTANY

Living Trees of Species Thought Dead Are Found

➤ FINDING living trees of a supposedly extinct species was the exciting experience reported by Dr. Herbert L. Mason of the University of California to the Princeton University Bicentennial Conference on Genetics, Paleontology and Evolution.

He was collecting fossil pine cones on Santa Cruz island off the southern California coast when he found trees bearing exactly the same kind of cones.

After he had published a description of the new-found species he began getting reports of the same pines on the mainland. Examination showed this to be incorrect. What he found was even more interesting. Pollen from the island trees blown across 30 miles of water by the wind had fertilized flowers on a closely related mainland pine and thus given rise to natural hybrids.

Science News Letter, January 18, 1947

Books of the Week

ANNUAL REPORT OF THE SMITHSONIAN INSTITUTION, 1945—*Govt. Printing Office,* 484 p., illus., $1.75. The usual appendix contains authoritative summary article for which this report has long been famous.

BIOLOGIA—Frans Verdoorn, Ed.—*Chronica Botanica,* $4 for 2 yrs. A 4-page monthly newsletter supplement to *Chronica Botanica,* listing international biological socities, commissions and congresses. Jan. 1947. Vol 1, No. 1.

CHEMICAL SPECIALTIES: A Symposium—Compiled by H. Bennett—*Chemical Pub. Co.,* 826 p., illus., $12.50. A guide to those who would like to build up a chemical specialty business. Its purpose is to teach the elements of chemistry to the businessman and give the necessary business information to the chemist.

EVERYBODY'S HANDICRAFT HANDBOOK: Hobbies Made Easy For Fun and Profit—*Progress Press,* 155 p., illus., paper, $2. A manual that describes the major arts and crafts at the most elementary level and guides the reader through the more advanced stages.

THE FREEZING PRESERVATION OF FOODS—D. K. Tressler and C. F. Evers—*Avi Publ. Co.,* 932 p., illus. $10. A revised and enlarged edition including all phases of the preservation of food by means of freezing.

FROM HEAD TO FOOT: Our Bodies and How They Work—Alex Novikoff—*Int. Pubs.,* 96 p., illus., $2. A book that discusses each life process, and describes the amazing variety of jobs our bodies do—breathing, digestion, circulation of blood, etc. For readers from the age 12 up. A Young World Book.

HANDBOOK OF MICROSCOPIC CHARACTERISTICS OF TISSUES AND ORGANS, 3rd ed.—Karl A. Stiles—*Blakiston,* 214 p., illus., paper, $1.75. An outline which will assist in learning and understanding the microscopic structure and functionings of living tissues and organs.

HOW TO FLY: A Practical Guide to the Fundamentals of Flight—*Progress Press,* 56 p., illus., paper, $1. An explanation of what actually happens in the process of learning to fly, based upon official information of the Civil Aeronautics Administration.

OPERATION CROSSROADS: The Official Pictorial Record—The Office of the Historian Joint Task Force One—*Wise,* 224 p., illus., $2. A record which makes clear the extent of the preparations and activities constituting Joint Task Force One.

THE PERSONALITY OF THE PRESCHOOL CHILD: The Child's Search for His Self—Werner Wolff—*Grune & Stratton,* 341 p., illus., $5. A study that deals with such practical questions as education, guidance, and personality diagnosis.

PRACTICAL ELECTRICAL MATHEMATICS—William E. Rasch—*Heath,* 357 p., illus., $2. A book that provides organized instruction in the mathematics of the electrical trade.

THE PROBLEM OF FERTILITY: Proceedings of the Conference on Fertility Held Under the Auspices of the National Committee on Maternal Health—Earl T. Engle, Ed.—*Princeton Univ. Press.,* 254 p., illus., $3.75.

SMITH'S COLLEGE CHEMISTRY, 6th ed.—William F. Ehret—*Appleton-Century,* 677 p., illus., $4.75. An up-to-date text for the college chemistry student.

Science News Letter, January 18, 1947

MEDICINE

Streptomycin Ear Damage

➤ DIZZINESS, vertigo and transient or permanent loss of hearing may follow streptomycin treatment, Drs. Edmund P. Fowler and Ewing Seligman of Columbia University College of Physicians and Surgeons warn in the *Journal of the American Medical Association* (Jan. 11).

Because of the possibility of such complications, physicians should consider carefully whether streptomycin is the medicine to give in a particular case and should examine the patient's hearing and balance mechanism within the ear by audiograms and vestibular tests, the New York physicians advise.

If the patient needs the drug, however, the possibility of ear complications should not keep it from being used.

Ear complications occurred in four of about 160 patients treated with streptomycin at Halloran General Hospital, the doctors report. Other cases have been reported by a few other physicians. Commenting on all these, Drs. Fowler and Seligman state:

"It is evident that a high incidence of vestibular disturbance and a sizable number of cases of deafness, either transitory or permanent, will occur with the use of streptomycin of even the best current manufacture if large doses of the drug are given over prolonged periods."

The ear symptoms, if they occur, start as a rule on the 17th to 20th day. The doctors hope it will turn out that they are due to impurities in the drug. To prove this, before and after tests of the patient's ears should be made, they suggest, and records of manufacturers' names and lot numbers of the drug used should be carefully kept.

Science News Letter, January 18, 1947

PUBLIC HEALTH

Veterans Improve Health On College Campuses

➤ THE GENERAL health level on American college campuses appears to be improving with the enrollment of veterans in large numbers.

This has been found true at the University of California, where slightly more than half the 22,000 students are veterans. The same improvement in general health has also been noted at the University of Michigan.

Dr. William G. Donald, University physician at Berkeley, said that the student sick rate is far below the prewar level. He cited the following figures on outpatient visits to the student hospital showing the sudden improvement in health: in November, 1944, there were 1,228 visits per thousand; in November, 1945, after the first influx of veterans, the rate went down to 795 per thousand; in November, 1946, after veterans became the predominant group on the campus, the rate was 523 per thousand.

Dr. Donald says the veterans' superior health can be attributed to several factors: they are a physically superior group; they have had more than ordinary contacts with people through travel, building up natural immunities; and their immunity to disease has been increased by frequent vaccinations.

Science News Letter, January 18, 1947

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• New Machines and Gadgets •

❁ *BAKING utensil for pies with no upper crust is a flat plate with a removable rim for use in baking the lower crust. This rim, recently patented, can be replaced after the crust is baked by a measuring rim so divided that pieces of desired size can be accurately cut.*

Science News Letter, January 18, 1947

❁ *INSECT DEFLECTOR, recently patented, to prevent bugs from squashing on automobile windshields, consists of concentric ridges built into the hood of the car that cause upward drafts to carry the insects over the top. The ridges give the hood a terraced effect.*

Science News Letter, January 18, 1947

❁ *DUST COLLECTOR for the home is an electrostatic air cleaner, refrigerator-sized, that relieves daily dusting by removing the particles from the air. The air is driven through an electrostatic field where the particles are electrically charged, then passes oppositely charged plates which pull aside the dust particles.*

Science News Letter, January 18, 1947

❁ *STAINLESS-CLAD steel bumpers for automobiles retain their high polish during the life of the car. The stainless-cladding is inseparably united to the mild steel backing, giving a product with excellent mechanical and rust-resistant properties.*

Science News Letter, January 18, 1947

❁ *HAMMOCK PACK for fruit utilizes two pliofilm-covered sheets of cardboard with circular holes for the fruit.*

The film across the holes, when heated slightly, stretches to fit the fruit, shown in the picture.

Science News Letter, January 18, 1947

❁ *OUTBOARD marine engine, used by the Japs for propelling heavy barges and pontoons for bridges, is an inverted affair; its four cylinders are below the crankshaft. This gives it a lower center of gravity, and makes it less conspicuous.*

Science News Letter, January 18, 1947

❁ *RESERVATION machine, in use in an airline ticket office, enables the agent to determine if space is available for any particular flight. When he presses buttons representing date and flight number, a master electronic control board in a central office automatically signals the answer.*

Science News Letter, January 18, 1947

❁ *PLASTIC keys for pianos, beginning to replace ivory from elephants' tusks, cost much less, are of uniform color, and have no joints to reopen because they are made in one piece. They do not crack or discolor under long usage.*

Science News Letter, January 18, 1947

❁ *MOBILE motion picture equipment, mounted in trucks, is used to entertain American soldiers at isolated posts. It has a new, speedy, dual-arc projector that gives clear 16-millimeter pictures.*

Science News Letter, January 18, 1947

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